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ABSTRACT

The research reported includes a profile of all sixty ThinkAbout programs with respect to demographic balance, personal/social behaviors portrayed by major characters, and value-laden content. The profile is a summation across a 5-stage content analysis which was integrated with other formative evaluation techniques in the three year ThinkAbout production process. Emphasis is given to the unique contribution of the content analysis data in comparison to other formative evaluation strategies. While the traditional ThinkAbout formative strategies provided information about possible changes within a specific product unit, the ThinkAbout content analysis system was devised to provide continuity of information, and to feed information forward to the development of future program units in the series, monitoring concept, and illuminating needs for changes or improvement. A list of 12 references is included. (Author/CHC)

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Using Content Analysis as a Formative Technique in a Self-Correcting Production Process

by

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How can you ensure meeting your own expectations for prosocial content and a culturally representative instructional television series while employing nearly 100 people, eight production houses, and numerous writers in the production of sixty programs during a two-year period? When the series consists of sixty programs each having a unique cast, storyline, and cultural setting, the challenge is great. Extraordinary measures are required to confirm that intended instructional and prosocial guidelines are in fact implemented.

Just such a situation was encountered with the production of ThinkAbout, an instructional television (ITV) series developed by the Agency for Instructional Television (AIT). Guidance in development and funding were provided by a consortium of 35 state and provincial education agencies with additional support from the Corporation for Public Broadcasting and the Exxon Corporation.

Aimed at 5th and 6th graders, ThinkAbout was designed to strengthen reasoning skills and review and reinforce language arts, mathematics, and study skills. As part of the Skills Essential to Learning Television Project, ThinkAbout's four major goals were to encourage and improve confident and flexible thinking, self-management, effective expression, and systematic reasoning.

The series was divided into "clusters," or groups of programs. Clusters presented general thinking skills--classifying, giving and getting meaning, sequencing, using criteria among them--skills that can be used when solving problems in school and out.

Interspersed between clusters were two other kinds of programs--tips and challenges. Tips offered ideas to aid problem-solving. Challenges were complex, thought-provoking problems intended to stimulate students' intellectual adrenalin. Each challenge could be used to provide an indication of how students are progressing toward the goal of independent learning. Overall, ThinkAbout's sixty programs offered students opportunities to improve their reasoning, study, mathematics, and language arts and to apply them repeatedly.

An implicit need for a ThinkAbout content analysis arose early in the course of the project's development. Along with the determination to create a prosocial educational product, the staff recognized the desirability of depicting thinking and reasoning processes in a context of universally appealing situations which fostered the self-confidence and self-respect of the fifth and sixth grade audience. A series of AIT-sponsored "think tanks" had stimulated consideration of a broad range of curriculum issues and student characteristics (Sloan, 1981). The intents of the ThinkAbout instructional design had been laid out early in the development process, including commitments to the inclusion of prosocial content, positive role modeling, and balance in representation. The project evaluation team were challenged by the instructional design commitments, recognition of an inevitable "hidden curriculum" (Gerbner, 1974), and by the necessity for periodic informational input to the production process. A new formative technique was needed, and content analysis offered a helpful methodology.

Carney (1972) related content analysis procedures to discerning the intent of a communicator. One of the major purposes of the ThinkAbout content analysis was to monitor the congruity between the intended and

actual content. Because intentions or project goals were necessarily stated in general terms, and program content is necessarily specific and detailed, the analysis allowed for making inferences about the actual ThinkAbout content in the context of the ThinkAbout instructional design (Krippendorff, 1980). Creating a prosocial product, however, also necessitated a watchdog on unintended content which might deter from the intended prosocial impact. A unique feature of the ThinkAbout content analysis derived from the need to provide information during, not after, the production process so that necessary changes could be made. Although Grobman (1972) was cited as proposing content analysis as a formative technique (Borich, 1974), most recent publications have focused on the content analysis of completed materials, whether television (Greenberg, 1980) or other media (Rosengren, 1981).

The degree of success in attaining a product which matched AIT's prosocial intentions can be best shown by sampling the final data profiles. The profiles represent four areas of concern: demographic representation, value-laden content, positive role-modeling, and stereotyping. A complete final report of the ThinkAbout data is forthcoming. Separate content analysis instruments were developed for demographic representation and value-laden content. A third instrument combined the role-modeling and stereotyping issues. (See Jochums, Neubert & Rockman, 1978, for a complete discussion of the methodology.) The excerpts below pertain to demographic balance and value-laden content.

Demographic Balance Data

The following data demonstrate the result of efforts to create a demographic balance in a television series as a first step to prosocial programming. While demographic balance is not a sufficient condition to

consider content "prosocial," one can argue that it should be considered a necessary condition.

For the demographic analysis, the source material was all 60 programs, each 15 minutes in length. The context unit was a single program, and recording units were a matrix of major characters by demographic characteristics. Two hundred sixteen major characters were identified across the series. An average of 3.6 major characters per program was consistent with the ThinkAbout Script Writer's Guide (1979), which urged simple, straightforward story lines with few major actors. The demographic characteristics of the total group of major characters are provided for the four person attributes in Table 1.

With regard to sex, the final distribution of 216 characters is 111 males (51.4%) and 105 females (48.6%).

These data on sex are quite close to the national census figures for 1970, which indicated that 51% of the population were females and 49% were males. ThinkAbout major character males (51.4%) outnumbered females (48.6%) slightly, which is, of course, reversed from the national norms. Comparing the ThinkAbout with commercial television dramas suggested an impressive success for the obtaining of balance in the series. Greenberg et al. (1980) reported that for three years (1975-78) males outnumbered females three to one when speaking characters were tabulated in seven types of television dramas.

Across five demographic content analyses ThinkAbout steadily approached a balance of males and females among major characters (Table 2). What is clear from Table 2 was the early commitment to balance by the production staff. The point of greatest imbalance occurred when the first 11 programs were content-analyzed; even the least balanced content analysis report

Table 1

Demographic Characteristics of Major Characters in Sixty Programs *

Characteristics	%	Number of Characters
Sex		
Male	51.4	111
Female	48.6	105
Age		
Younger than target-age	2.3	5
Target-age	57.4	124
Teenage	11.1	24
Adult	25.9	56
Senior Citizen	3.2	7
Ethnic Group		
Asian	3.7	8
Black	14.4	31
Hispanic	1.4	3
Native American/Canadian	1.4	3
White	76.9	166
White Ethnic	1.9	4
Other/can't tell	.5	1
Apparent Exceptionalities		
Educational	1.4	3
Physically Handicapped	3.7	8
Behavioral-Social	12.0	26
Other	0.0	0
None Apparent	82.9	179

* The tabulations represent a total of 216 major characters.

Table 2

Balance of Male and Female Major Characters
Across 5 Content Analysis Reports

Sex	Report 1 - 11 Programs		Report 2 - 21 Programs		Report 3 - 30 Programs		Report 4 - 45 Programs		Report 5 - 60 Programs	
	%	Number	%	Number	%	Number	%	Number	%	Number
Male	56.9	29	55.6	50	51.6	64	51.8	87	51.4	111
Female	43.1	22	44.4	40	48.4	60	48.2	81	48.6	105
TOTAL	100.00	51	100.0	90	100.0	124	100.0	168	100.0	216

(c.a. 57% male, 43% female) was far closer to equal representation than commercial television has been able, or willing, to attain.

With respect to age groups, target-agers represented over half the major characters in the series. The distribution of characters among age groups was almost the same for all five demographic analyses. The adult and teenage categories included about 37% of the characters, and the remaining 5% were young children or senior citizens. While the profile percentages in Table 1 do not reflect the national age group distribution, they clearly indicate two things. First, all age groups were represented in the series; and, second, the large numbers of target-age characters allowed ample opportunity for characters to appear with whom a variety of students in the viewing audience could identify.

Six ethnic groups were represented in the series. From the first formative content analysis report through the final profile of sixty programs, the proportional representation shifted towards balanced representation. Minority groups were represented by 23.3% of the major characters (N=50). More than half of the minority major characters were black. Greenberg (1980) cited the 1970 census as reporting population percentages of 89% white and 10% black. Comparing ThinkAbout to these national figures, whites are somewhat under-represented in ThinkAbout and blacks, over-represented. However, when 1977 minority school enrollment demographics were considered, blacks were slightly under-represented (National Center for Education Statistics, 1978). In 1977, 15.5% of the school enrollment were black students, 1.2% Asian, and 6.4% Hispanic. Using these comparison figures, ThinkAbout over-represented the Asian minority and under-represented the Hispanic minority.

Apparent exceptionalities were represented in several of the 60

programs. Definitions of exceptionalities included a variety of both gifted, talented, and handicapped characteristics. The most frequent category was behavio al/social exceptionalities; it included an array of major characters who were considered exceptionally talented by the panel of raters. The physical category included 3.7% (N=8) major characters, and the educational exceptionality included 1.3% of the 216 major characters. Almost 83% of the major characters (N=179) were not considered exceptional; a large majority of characters represented "ordinary people." During program production, concerns surfaced about ThinkAbout characters being "super-kids" with whom students might not identify. Content analysis, however, revealed that 83% of the characters with major roles were seen by teachers as fairly typical or not exceptional.

Balance is more difficult to achieve when two defining characteristics are used. Content analysis can identify both strengths and weaknesses. The cross-tabulation of major character sex by ethnic group is displayed in Table 3. Sex is fairly well balanced within ethnic groups; the Asian category is over-represented by females, however.

The relationship of age to sex (see Table 4) demonstrates the frequency of target-age females over any other group. It is the only age category in which females outnumber males. Younger than target-age, adult, and teen-age categories show males outnumbering females.

Demographic data on minor characters, crowds, and nine categories of surface features will be available in the final report.

Value-laden Content Data

The ThinkAbout value-laden content analysis was an effort to summarize the world-view of ThinkAbout characters and describe the prosocial content

Table 3

Crosstabulation of Major Characters in All Programs
by Sex and Ethnic Group*

	Asian	Black	Hispanic	Native American/ Canadian	White	White Ethnic	Indeterminant	Row Total
Male	2 (1.8)	17 (15.3)	1 (.9)	1 (.9)	86 (77.5)	3 (2.7)	1 (.0)	111 (51.4%)
Female	6 (5.7)	14 (13.3)	2 (1.9)	2 (1.9)	80 (76.2)	1 (1.0)	0	105 (48.6%)
Column Total	8 (3.7)	31 (14.4)	3 (1.4)	3 (1.4)	166 (76.9)	4 (1.9)	1 (.5)	216 (100.0%)

* Cell entries are frequencies with percentages in parentheses.

Table 4

Crosstabulation of Major Characters by
Sex and Age Group for Sixty
ThinkAbout Programs

	Younger than Target-Age	Target-Age	Teenager	Adult	Senior Citizen	Row Total
Male	4 (1.9)	56 (25.9)	14 (6.5)	33 (15.3)	4 (1.9)	111 (51.4)
Female	1 (0.5)	68 (31.5)	10 (4.6)	23 (10.6)	3 (1.4)	105 (40.6)
Column	5 (2.3)	124 (57.4)	24 (11.1)	56 (25.9)	7 (3.2)	216 (100.0)

* Cell entries are frequencies with percentages in parentheses.

of ThinkAbout from the perspective of abstract values.

As early as 1975, the project had been committed to depicting the learner as an active participant in real-life situations. Since instruction was to be communicated in vivo, and since lifelike decisions and activities inevitably butt up against values, this orientation necessitated the consideration of values communicated.

Thirty-six values representing three facets of potential educational impact were selected (Table 5). The first were terminal, end-state, or social values (Christenson, 1977; Kitwood & Smithers, 1974). Examples of the 12 end-state values were justice, democracy, patriotism, freedom, and property. Phrased in a positive manner, they represented a consensus of the societal goals of many members of western societies. Various groups within a society may, however, prioritize the values differently from one another. These values are conveyed via characters, interactions, plot structure, etc. The second group, personal attributes, were conveyed primarily via characters and social interactions. Personal attributes included both instrumental and end-state values (e.g., self-respect, self-work, ambition, cleanliness, respect for authority, and individualism). The third group were instructionally related characteristics; they were specifically selected because of their relationship to ThinkAbout's goals and instructional concepts.

While the ThinkAbout instructional design promised a great deal to educators comprising the ThinkAbout consortium, the documents could not promise everything. In the area of modeling, both AIT and the consortium recognized that some values would be emphasized while others would be more balanced in their presentation. For example, individualism and assertiveness are inherent to modeling independent learning. Positive valuing of

competency and self-discipline are communicated when successful efforts at problem-solving are depicted. Educationally oriented values, like communication, logic/rationality, and reflection, were expected to be frequently communicated by the programs.

Within the consortium, discussions had occurred about both personal and educational values. While one group advocated modeling of children who are competent problem-solvers without adult assistance, another group arose to urge consideration of parents and teachers as resources and the need to model respect for authority figures. Both groups had ascribed to the series goal of promoting independent learning among self-managing intermediate grade students. How much independent thinking should be encouraged was argued.

The balance was provided by depicting appropriate occasions during which ThinkAbout characters exhibited dependence on adult mentors, accepted limitations imposed by parents, and displayed behavior which communicated the values placed on obedience and respect for adults. A benefit of such a balance was the realism communicated to a target-aged population which faces the tension of accommodating simultaneous needs for independence from, and dependence upon, authority figures.

As with the demographic analysis, the source material consisted of all 60 programs. The context unit, however, was a thematic scene, not the entire program. The thematic scene (see Jochums, Neubert & Rockman, 1978) necessitated the creation of an index for the comparison of various values. A value could be identified in a maximum of five scenes per program. The value-profile of the series is reported below in terms of the average number of scenes per program. Table 5 provides the relative incidence of the values in descending rank order for the social, personal, and educational

Table 5

Analysis of Incidence of Value-laden Content in 60 "ThinkAbout" Programs

Social	Average # Scenes/Program	Personal	Average # Scenes/Program	Educational	Average # Scenes/Program
Helpfulness	4.07	Politeness/Courtesy	4.53	Communication	4.7
Sensitivity to Worth of Others	4.02	Cleanliness	4.5		
		Sociability/Cheerfulness	4.42		
Equality of Sex	3.77	Assertiveness	4.17	Logical/Rationality	4.3
Honesty	3.77	Individualism	3.95		
		Self-reliance	3.78		
Freedom	2.87	Self-respect	3.78	Reflection	4.0
Property	2.83	Competency	3.68		
		Dependability/Reliability	3.47		
Equality of Race	2.50	Ambition	3.32	Openmindedness	3.7
Tolerance	2.07	Humor	3.10		
		Patience	2.92		
Generosity	1.77	Self-discipline	2.83	Imaginative/Creative	3.6
Justice	.68	Respect for Authority	2.62		
		Courage	1.6		
Democracy	.60	Obedience	1.45	Perseverance	3.45
Patriotism	.016	Humility	1.33		
		Sportsmanship	.87		

categories.

Social values judged to be communicated most frequently were a group of four evident in an average of 3.81 scenes per program. These values are helpfulness, sensitivity to worth of others, equality of sex, and honesty. The index translates translates into an average of over eleven minutes of each 15-minute program which were seen by teachers as communicating the four values. Communicated somewhat less often but still present in an average of six to nine minutes (2-3 scenes) per program were value messages about freedom, property, equality of race, and tolerance.

Many of the group of 18 personal values were recognized frequently in the program scenes (Table 1). Politeness, cleanliness, sociability, and assertiveness were present in virtually every ThinkAbout scene. Two educational values were as common or more common than these four, and none of the social values was so frequently evident. Ten other personal values were commonly identified, many of them related to the goals of fostering the students' view of himself/herself as an individual capable of self-management.

Six values were rated which reflect educational values: communication, logical/rationality, reflection, open-mindedness, imaginative/creative, and perseverance. All permeated the programs. As intended, logical, rational ThinkAbouters did successfully communicate educationally value-laden messages to the panel of teacher judges. The least evident educational value, perseverance, was identified in an average of 3.45 out of 5 scenes across 60 programs. The most common value, communication, was considered present in 4.7 scenes, on the average. In other words, educational values were identified as present in ten to fourteen minutes per program.

The ThinkAbout world emphasized educational values, with communication and logical/rationality the most consistently evident values of the 36 tabulated. The problem-solving focus of the series was supported by high degrees of value placed on reflection, open-mindedness, perseverance, and creative imagination. Only four social values and half of the personal values were so consistently identified. The ThinkAbouter lives and learns in a ThinkAbout society, and the society places a positive emphasis on helpfulness, sensitivity to others, and equality of sex. These societal goals or end-state values were heavily emphasized in programs.

Some personal attributes and social values were less emphasized in the ThinkAbout world. ThinkAbouters did not often confront government representatives or problems of government. Consequently, justice, democracy, and patriotism were seldom identified as value-laden content. ThinkAbouters appealed to community agents such as the police, but the value depicted in those scenes was most often helpfulness.

The results of the 60-program profile suggested a ThinkAbout world-view which was consistent with the promises made to the consortium and with the intentions of the instructional design.

A second aspect of the analysis of value-laden content will be reported later. It focuses on the scenes found to be questionable by teacher judges. Out of 300 scenes and 36 values, only 28 questions were raised about the acceptability of value-laden content in a given thematic scene. About one-third of the 28 pertained to situations in which teacher judges questioned multiple values for a single scene.

Making Content Analysis Work

The first question of relevance to this group is likely to be how to assure prosocial content and balance in a series. How to integrate

content analysis into the production process is a second question. Four steps are necessary, not all of which can be accomplished by the researcher/evaluator alone.

First, the need to accomplish a balanced, prosocial set of educational materials must be felt in a way that prompts action. The recognition of social, political, pressure is probably not sufficient although it is certainly as good a starting point as many projects will ever experience. The evaluation staff, at least a formative evaluation staff, can seldom impose the felt need on the other members of a project staff.

While the entire staff may recognize pressures from the marketplace or advocacy groups related to the actual intended audience of the product, several reactions can circumvent the feeling of a need. The most common perhaps is the sense that the project can create a balanced, prosocial product because it wants to. Sometimes emotional reactions surface along the line of feeling accused of being biased or prejudiced or "not interested in kids"; such reactions promote a defensive, resistant posture, not positive action. Whether or not we are "good people" seems somehow on the line.

The appropriate, constructive felt need occurs when a staff can appreciate the immense difficulty involved in creating a instructionally successful product satisfactory to a myriad of viewpoints and interest groups. That one might need assistance tracking the progress of a developing product relates to the complexity of the development process more than then moral rectitude of the staff. A key awareness comes with a sense that the content analytic procedures will provide information helpful to product development and that the procedures will of necessity be adapted to the individual project needs. (More to say

about that later.)

The second step necessary to making a content analysis function as a formative tool is slightly less emotional but requires substantial intellectual effort on the part of the whole staff or at least key members of the design team. The project's goals in the prosocial area must be delineated carefully and completely. It is only at this point that one can ensure the completeness of the content analysis. Carney (1972) emphasized that content analysis must start with the intentions of the communicator.

The construction of the intents of the ThinkAbout series included compilation of documents, review by staff members of the content analysis categories, and a distinguishing between interesting and essential data. Because content analysis generates massive amounts of data to analyze and report, the interesting fairly soon gave ground to the essential. The essential, of course, had an interest of its own. The combination of reviewing the intents of the series and identifying the issues to be covered required about 3 months. ThinkAbout aimed at a balance across the series of several demographic groups, incorporation of prosocial content, and positive role-modeling. This final statement is deceptively simple; the process of operationalizing it for content analysis was arduous and circuitous.

The third step is to make a commitment to the research process in the sense of staff time and budget. While the ThinkAbout analysis was elaborate and time-consuming, one is not limited to a large-scale analysis. The scale of the analysis should reflect the intents of the project.

The fourth step in successfully incorporating a content analysis into formative evaluation is the assumption of a new perspective on the role

of evaluation in product development. Most formative evaluation of television programs at AIT involves the testing of a program prototype (script, rough cut, or rough assembly). The evaluation information becomes feedback to the production and design staff members and is geared to change in that specific program unit. For ThinkAbout each of the program units was tested individually in classrooms or by teacher or student panels (see Figure 1). Evaluation data and revisions in Program A would have little to do with the information and revisions of Program B.

Content analysis, on the other hand, was reported after a group of rough cuts had been completed and guided the direction of casting and portrayal of activities in later scripts and rough cuts. The information was not feedback for use in revision of the programs actually analyzed. Content analysis data was fed forward to future programs.

The diagram in Figure 2 depicts the manner in which the content analysis information flowed into the program development process for the ThinkAbout series. The product development stages are shown to clarify the points of intervention.

Traditionally, content analysis data has been collected on finished products, reported well after production is complete, and impact of the content analysis report occurred even later, presumably on the development of other similar materials (e.g., television, textbooks, etc.). The impact of traditional content analyses is typically indirect, occurring via publications in research meetings or journals.

The ThinkAbout analysis, on the other hand, provided information collected earlier in product development, was reported quickly, and the impact was made on very early stages (treatments, draft scripts, casting prior to production) of the development of later programs. As indicated

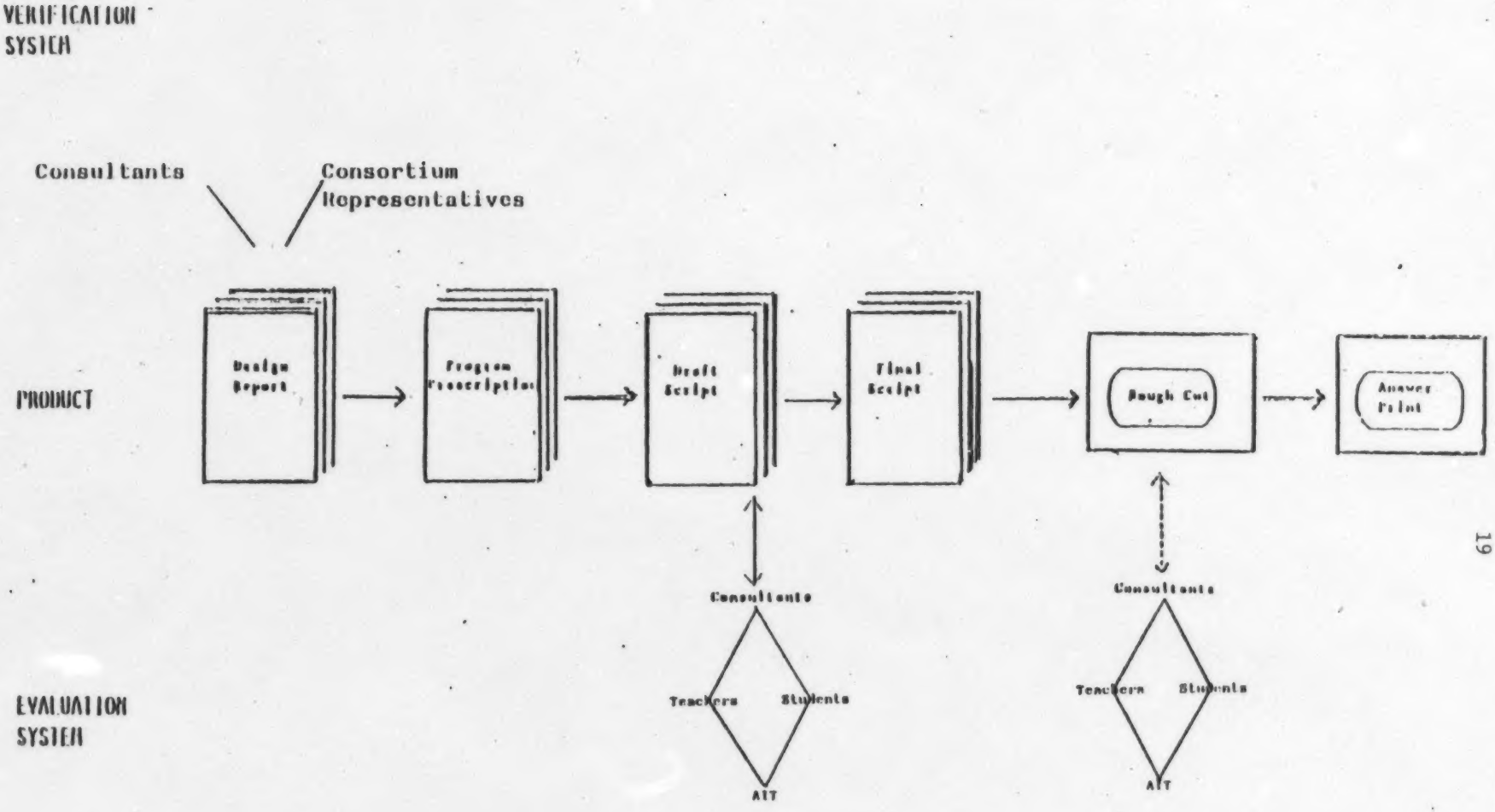

Figure 1. Development Process for a Single Program

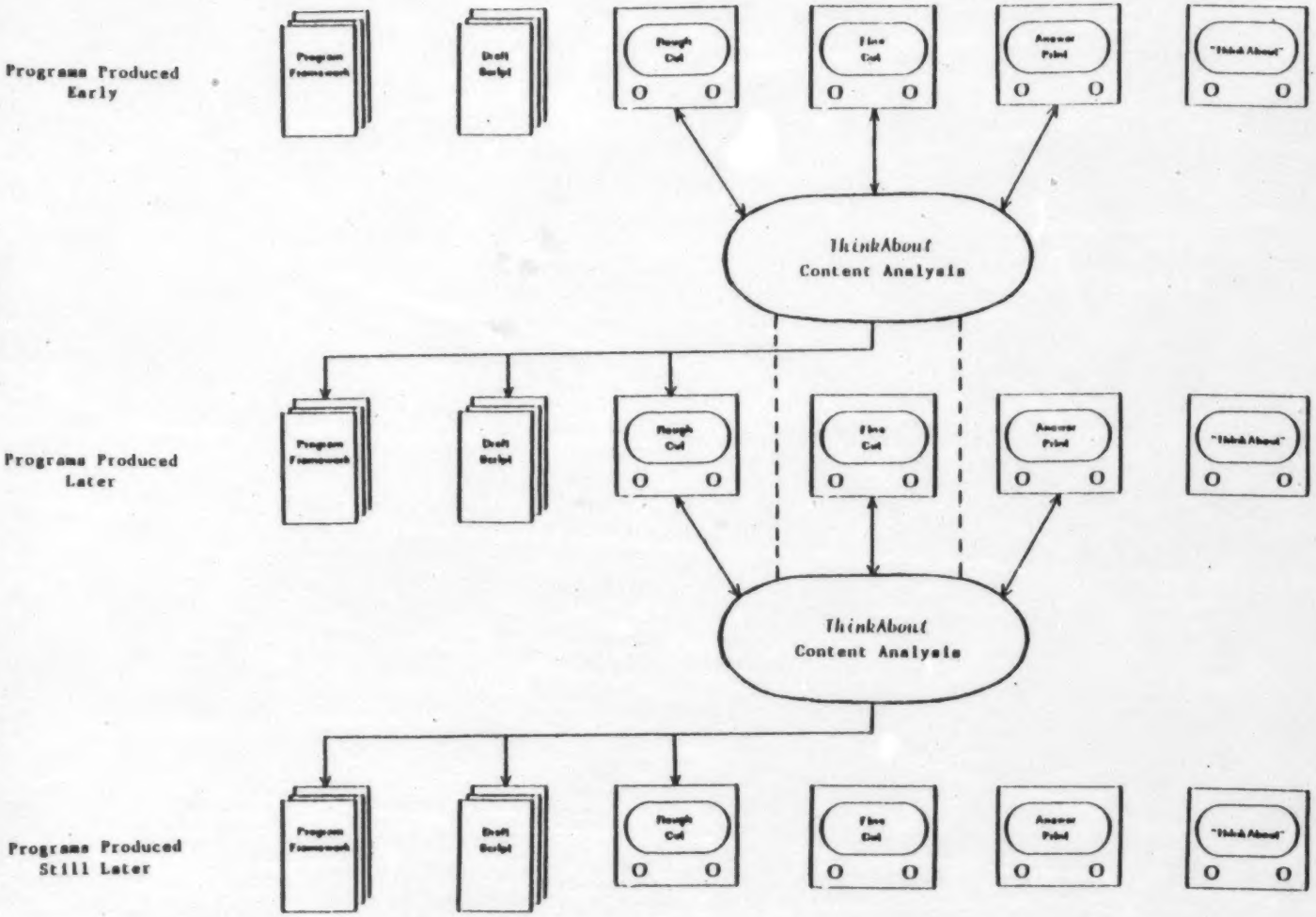

Figure 2. Formative Information System, Based on Content Analysis Methodology

above, the ThinkAbout analysis was reported in five stages. The demographic data on balance of male and female major characters (Table 2) illustrates the increasing balance evident in the content analysis reports of 11, 21, 30, and 45 programs. The 60-program report obviously could not impact on production since it was the overall series profile.

Not all content analysis issues showed such progressive change. The values profile was fairly well established in early reports and changed relatively little. The major commitment was to depicting an active, rather than passive, learner who achieved early and maintained throughout. Reporting good news can occasionally be the province of formative evaluators.

Unique Contribution of Content Analysis

The content analysis was unique among the formative evaluation techniques used in the ThinkAbout evaluation in at least four ways. First, the ThinkAbout content analysis had a total series perspective. The series perspective was not integral to other activities. Consultant reviews, teacher panel reviews, and the collection of classroom data or student panel data all focused on a single program in which revision would be immediate. Field tests of several programs (perhaps a ThinkAbout cluster) typically provided formative data for program revision and attempted to examine the learning or classroom process outcomes of those specific programs. Only the content analysis data was reported specifically with reference to program units not yet begun.

The second aspect of contribution unique to content analysis involved the opportunities to attend to issues tracked by virtually no one else and to focus on detail. Its information supplemented other formative procedures. For example, extensions of the demographic analysis not

reported above were to track the topography, family size, and site of activities. While subtle issues are deemed unimportant by some, the project considered the need to create a series providing a representative world with which many children could identify. Mountains, deserts, single-parent families, extended families, indoor and outdoor activities in school and home all contribute, along with other program surface features, to a sense of representativeness. Other issues, like the cross-tabulation of major characters by both sex and ethnic or age groups, are virtually impossible to assess outside a content analysis framework.

Thirdly, the content analysis was unique in the ThinkAbout formative evaluation because of the role and training of teacher judges. In other ThinkAbout evaluation activities, teachers and students were typically involved only one time; importance was given to teacher samples who exemplified first-time users of the series. Only occasionally would a given classroom be visited for a second evaluation. (Teacher and student panels, begun late in the production phase, were involved on more than one occasion.) The issues included in content analysis, however, were difficult to pick up or recognize by uninitiated respondents. Training focused the attention of the panel on specific characters, refined lists of behavior, or the definitions of values and the way such values can be communicated by an educational medium. Discussion during training not only attained the desired uniformity of response (i.e., reliability across raters) but also sharpened the viewing skills of teachers. The panel of judges represented the teacher audience but in a way quite different from that of other formative activities. Their responses were more narrow and directed, but also more refined and consistent with one another.

Last, the contribution of content analysis to a long series (large

number of program units) allowed for continuity of information. A variety of professionals influenced the direction of programs. Staff changes occurred. During two years of production and across 60 programs, details could have been lost or forgotten. Trying to balance even as obvious a variable as sex would have been difficult and the complexity of balancing sex by ethnic group by age would have been impossible. Maintaining a sense of the prosocial abstractions like values or role-modeling in 30 or 45 programs would have been at best a guess and a hope. The periodic content analysis reports assured the staff that the essential balance was maintained or provided suggested direction for change and improvement.

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